REMARKS

Applicants thank the Examiner for the very thorough consideration given the present application.

Claims 3-20 are now present in this application. Claims 3, 4, 5, 8 and 12 are independent.

Amendments have been made to the specification, claims 1 and 2 have been canceled, and claims 3-6, 8-12, 16 and 19 have been amended. No new matter is involved.

Reconsideration of this application, as amended, is respectfully requested.

Information Disclosure Citation

Applicants thank the Examiner for considering the references supplied with the Information Disclosure Statement filed March 14, 2005, and for providing Applicants with an initialed copy of the PTO-1449 form filed therewith.

Specification Amendments

Applicants have amended the specification in order to correct a minor typographical error, and to place the specification in better form.

Claim Suggestion

The Examiner has suggested deleting "214" and "S1" from claim 6 Applicants have amended claim 6 in order to accomplish this.

Rejection Under 35 U.S.C. § 102

Claims 1-6, 8 and 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by DE 75 13 261. This rejection is respectfully traversed.

Initially, applicants note that this rejection is moot with respect to claims 1 and 2, which have been canceled.

Applicants' below-named representative contacted Examiner Krishnamurthy before preparing this Amendment and was informed that the Examiner prepared the outstanding Office Action without obtaining an English language translation thereof.

In order to understand this rejection more clearly, Applicants' below-named representative obtained a partial translation of DE 75 123 261 and obtained computer generated translations of DE 75 13 261 from the "Google" Internet website. Copies of those translations are attached.

During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444(Fed. Cir. 1992); In re Piasecki, 745 F.2d 1468,

1472, 223 USPQ 785, 788(Fed. Cir. 1984). This burden can be satisfied when the PTO presents evidence, by means of some teaching, suggestion or inference either in the applied prior art or generally available knowledge, that would have appeared to have suggested the claimed subject matter to a person of ordinary skill in the art or would have motivated a person of ordinary skill in the art to combine the applied references in the proposed manner to arrive at the claimed invention. See Carella v. Starlight Archery Pro Line Co., 804 F.2d 135, 140, 231 USPQ 644, 647 (Fed. Cir. 1986); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); In re Rinehart, 531 F.2d 1048, 1051-1052, 189 USPQ 143, 147 (CCPA 1976).

If the PTO fails to meet this burden, then the applicant is entitled to the patent. However, when a *prima facie* case is made, the burden shifts to the applicant to come forward with evidence and/or argument supporting patentability. Patentability *vel non* is then determined on the entirety of the record, by a preponderance of evidence and weight of argument.

A prior art reference anticipates the subject matter of a claim when that reference discloses every feature of the claimed invention, either explicitly or inherently. In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and Hazani v. Int'l Trade Comm'n, 126 F.3d 1473. 1477. 44 USPQ2d 1358, 1361 (Fed Cir. 1997). While, of course, it is possible that it is

inherent in the operation of the prior art device that a particular element operates as theorized by the Examiner, inherency may not be established by probabilities or possibilities. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981) and In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

What is alleged to be inherent must necessarily occur. The mere fact that something *may* result from a given set of circumstances is not sufficient. In re Oelrich, 212 USPQ 323, 326 (CCPA 1991). "Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." Trintec Indus., Inc. v. Top-U.S.A. Corp., 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002) (quoting In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)).

It appears from the aforementioned translations that pending claims 3-6, 8 and 10 are not anticipated by DE 75 13 261 for the following reasons.

With respect to claim 3, this claim positively recites a combination of features including wherein the sloping angle of the sloping surface of the discharging cover is more than four degrees. The Office Action asserts that the angle of the sloping surface α is seen in Fig. 1 to be greater than four degrees.

Applicants respectfully submit that DE 75 13 261 only discloses this angle to be "of minimal size." See, in this regard, the enclosed English

language translation of page 3, first two paragraphs of DE 75 13261. Thus, there is no explicit or inherent disclosure in the specification that the angle of the sloping surface is more than four degrees.

Turning to Fig. 1, we are faced with a patent drawing, not an engineering drawing that is drawn to scale. Applicants respectfully submit that patent drawings are normally not drawn to scale, In re Schreiber, 128 F.3d 1473, 1477-79, 44 USPQ2d at 1431-32, Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1565, 19 USPQ2d 1111, 1118 (Fed. Cir. 1991), In re Mraz, 455 F.2d 1069, 1972, 173 USPQ 25, 27 (CCPA 1972) and In re Heinle, 342 F.2d 1001, 1007, 145 USPQ 131, 136 (CCPA 1965). Moreover, it would appear that the specific angle drawn in Fig. 1 has been exaggerated just to emphasize that an angle is present in the device shown in Fig. 1, without illustrating a particular angle.

Under the circumstances, Applicants respectfully submit that the angle disclosed in DE 75 13 261 as being of "of minimal size," is neither explicitly nor inherently (i.e., necessarily) disclosed as being greater than four degrees.

Accordingly, the Office Action does not make out a *prima facie* case that claim 3 is anticipated by DE 75 13 261.

Further, with respect to claim 4, this claim positively recites a combination of features including that the valve spring has different elastic stiffness at both sides from its center.

The Office Action provides no indication of where this feature is disclosed

by DE 75 13 261 and merely speculates that this feature is disclosed by the reference, instead of providing objective factual evidence in support of this speculative conclusion. Applicants cannot find any basis for this speculative conclusion either explicitly or inherently in DE 75 13 261. In fact, the highly schematic spring shown in Fig. 1 appears to indicate equal spacing of the coils.

Accordingly, the Office Action does not make out a *prima facie* case that claim 4 is anticipated by DE 75 13 261.

Further, with respect to claim 5, this claim positively recites a combination of features including wherein the sloping surface of the discharging cover slopes on the basis of a contact surface of the cylinder with which the discharging valve is in contact, and a side of a valve spring with greater elastic stiffness is positioned at a sloping surface side having a nearest distance from the contact surface of the cylinder.

The Office Action provides no indication of where this feature is disclosed by DE 75 13 261 and merely speculates that this feature is disclosed by the reference, instead of providing objective factual evidence in support of this speculative conclusion. Applicants cannot find any basis for this speculative conclusion either explicitly or inherently in DE 75 13 261. In fact, the highly schematic spring shown in Fig. 1 appears to indicate equal spacing of the coils.

Accordingly, the Office Action does not make out a *prima facie* case that claim 5 is anticipated by DE 75 13 261.

Further, with respect to claim 6, this claim positively recites a combination of features including wherein the sloping surface of the discharging cover slopes on the basis of a contact surface of the cylinder with which the discharging valve is in contact; and one side of a valve spring with smaller elastic stiffness is positioned at a sloping surface side having a furthest distance from the contact surface of the cylinder.

The Office Action provides no indication of where this feature is disclosed by DE 75 13 261 and merely speculates that this feature is disclosed by the reference, instead of providing objective factual evidence in support of this speculative conclusion. Applicants cannot find any basis for this speculative conclusion either explicitly or inherently in DE 75 13 261. In fact, the highly schematic spring shown in Fig. 1 appears to indicate equal spacing of the coils.

Accordingly, the Office Action does not make out a *prima facie* case that claim 6 is anticipated by DE 75 13 261.

Further, with respect to claim 8, this claim positively recites a combination of features including wherein outer surface of the sloping surface of the discharging cover slopes in response to the sloping surface, and a thickness of a wall formed by the sloping surface of the discharging cover and the outer surface thereof is constant.

The feature of a thickness of a wall formed by the sloping surface of the discharging cover and the outer surface thereof is constant is not even

addressed in the rejection. For this reason alone, the rejection is improper and fails to make out a *prima facie* case of anticipation of claim 8 by DE 75 13 261. Moreover, Figs. 1, 3 and 4 clearly show a wedge-shaped outer wall in DE 75 13 261.

Accordingly, the Office Action does not make out a *prima facie* case that claim 8 is anticipated by DE 75 13 261.

Further with respect to claim 10, this claim depends on claim 4 and is not anticipated by DE 75 13 261 at least for that reason, as explained above.

Accordingly, the office Action does not make out a *prima facie* case that claim 10 is anticipated by DE 75 13 261.

Reconsideration and withdrawal of this rejection of claims 1-6, 8 and 10 is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 11-16, 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DE 75 13 261. This rejection is respectfully traversed.

With respect to claim 11, this claim depends on claim 4, the subject matter of which is not disclosed by DE 75 13 261. So, even if one of ordinary skill in the art were properly motivated to provide a conical spring in DE 75 13 261, the modified version of this reference would not meet or render obvious the claimed invention.

Furthermore, instead of providing objective factual evidence of proper motivation for one of ordinary skill in the art to provide a conical spring in DE 75 13 261, the Office Action improperly relies on a *per se* rule of unpatentability, i.e., that the specific choice of a conical spring is a design expedient over those features disclosed in the DE '261 document in that it neither solves any stated problem nor provides any new and/or unexpected result.

The Office Action's position in this regard is completely at odds with established precedential case law of the Court of Appeals for the Federal Circuit. As stated by the Federal Circuit in In re Ochiai, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995), "reliance on *per se* rules of obviousness is legally incorrect and must cease."

Moreover, this rejection impermissibly eliminates the Office's burden of providing objective factual evidence of proper motivation and improperly places the burden on Applicants of stating why providing a conical spring is not obvious.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claim 11.

Further, with respect to claim 12, this claim positively recites a combination of features, including wherein the discharging valve has a compression plane on one side thereof for contacting the cylinder and a sloping surface located on the opposite side thereof by which the valve spring is

supported.

The Office Action addresses the sloping surface feature by improperly relying on the *per se* rule of unpatentability that a mere reversal of parts is an expedient that is obvious to one of ordinary skill in the art.

As pointed out above, the Office Action's position in this regard is completely at odds with established precedential case law of the Court of Appeals for the Federal Circuit. As stated by the Federal Circuit in In re Ochiai, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995), "reliance on *per se* rules of obviousness is legally incorrect and must cease."

Moreover, the assertion that such a reversal would not change the operation of the device begs the question of proper motivation to provide such a reversal and fails to provide objective factual evidence or proper motivation to modify DE 75 13 261, as suggested.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claim 12.

Further, with respect to claim 20, which depends on claim 12, comments similar to those presented with respect to the traversal of this rejection of claim 11 regarding the improper *per se* rule of a design expedient, apply here, as well.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claim 20.

Further, with respect to claims 13-16, which are not even addressed in the

rejection, these claims depend from claim 12 and the Office Action fails to make out a prima facie case of obviousness of claims 13-16 because of the failure of this rejection to even discuss those claims and because of the features positively recited in claim 12, which are also recited in claims 13-16, and are not obvious over DE 75 13 261 for reasons stated above.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claims 11-16, 19 and 20.

Claims 7 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DE 75 13 261 as applied in the rejection of claims 1-6, 8 and 10, and further in view of U.S. Patent Application Publication US 2002/0150488) to Lee et al. ("Lee"). This rejection is respectfully traversed.

Applicants respectfully submit that claim 7 depends from claim 4, which is not anticipated by DE 75 13 261 for reasons presented above. Moreover, Lee is not being applied to remedy the aforementioned deficiencies of DE 75 13 261. Accordingly, even if it were obvious to modify DE 75 13 261 as suggested, the resulting modification would neither meet not render obvious the claimed invention.

Further, with respect to claim 17, which depends from claim 12, Applicants respectfully note that DE 75 13 261, as applied in the rejection of claims 1-6, 8 and 10 does not even address all of the features of claim 12 and, for this reason alone, the rejection is improper.

Moreover, Applicants respectfully submit that even if it were obvious to modify DE 75 13 261 in view of Lee, as suggested, the resulting modification would not meet or render obvious the features of claim 12, from which claim 17 depends, at least for reasons stated above.

Accordingly, this rejection of claims 7 and 17 does not make out a *prima facie* case of obviousness of the invention recited in claims 7 and 17.

Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 9 and 18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over DE 75 13 261 as applied to claims 1-6, 8 and 10, and further in view of the Applicant Admitted Prior Art (APA). This rejection is respectfully traversed.

Initially, Applicants respectfully note that they have not admitted that Figures 1-4 and the associated description thereof in the specification are prior art to Applicants. In Fleming v. Giesa (BdPatApp&Int) 13 USPQ2d 1052 (7/17/1989), it was held that that for an admission to be used against a party, it must be clear, unequivocal and unmistakable. See also, Harner et al. v. Barron et al., 215 USPQ 743 (Comr Pats 1981), Suh v. Hoefle (BdPatApp&Int) 23 USPQ2d 1321 (4/30/1991), Issidorides v. Ley (BdPatApp&Int) 4 USPQ2d 1854 (4/2/1985) and Ex parte The Successor In Interest Of Robert S. McGaughey (BdPatApp&Int) 6 USPQ2d 1334 (3/4/1988).

All that Applicants have done is to refer to Figs. 1-4 as "Conventional Art." Something can be conventional art in the sense that it is practiced in the real world at the time of Applicants' filing of this Application and may yet not be prior art to Applicant in any sense.

Under the circumstances, i.e., where Applicants merely describe Figs. 1-4 as conventional art, the Office Action has not established that Applicants have made a clear, unequivocal and unmistakable admission on the record that what is disclosed in Figs. 1-4 and their associated description in Applicants' specification is prior art to Applicants. In this regard, the Examiner is also advised that the initial burden to establish something as prior art is on the Office as part of its burden of making out a *prima facie* case of unpatentability. The Office has not met that burden merely by speculating that Figs. 1-4 are admitted prior art.

Additionally, Applicants respectfully submit that claim 9 depends from claim 4, which is not anticipated by DE 75 13 261 for reasons presented above. Moreover, Applicants' Figs. 1-4 are not being applied to remedy the aforementioned deficiencies of DE 75 13 261. Accordingly, even if it were obvious to modify DE 75 13 261 as suggested, the resulting modification would neither meet not render obvious the claimed invention.

Further, with respect to claim 18, which depends from claim 12, Applicants respectfully note that DE 75 13 261, as applied in the rejection of

claims 1-6, 8 and 10 does not even address all of the features of claim 12 and, for this reason alone, the rejection is improper.

Moreover, Applicants respectfully submit that even if it were obvious to modify DE 75 13 261 in view of Applicants' Figs. 1-4, as suggested, the resulting modification would not meet or render obvious the features of claim 12, from which claim 18 depends, at least for reasons stated above.

Furthermore, the Office Action fails to provide objective factual evidence that one of ordinary skill in the art would turn to Applicants' Figs. 1-4 to modify DE 75 13 461, especially where DE 75 13 461 does not disclose any need to be modified, no objective factual evidence has been presented that the outflow characteristics of the compressor of DE 75 13 261 are sufficiently similar to those of Applicants' Figs. 1-4 so that one of ordinary skill in the art would be motivated to look to the latter to modify the former.

Accordingly, the Office Action fails to make out a *prima facie* case of obviousness of the invention recited in claims 9 and 18.

Additional Cited References

Because the remaining references cited by the Examiner have not been utilized to reject the claims, but have merely been cited to show the state of the art, no comment need be made with respect thereto.

Conclusion

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

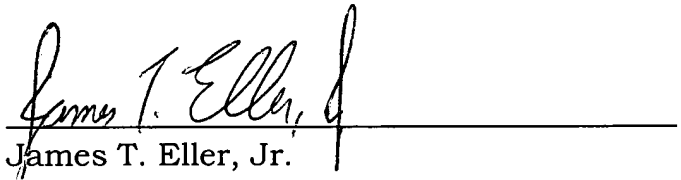
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Robert J. Webster, Registration No. 46,472, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By: 
James T. Eller, Jr.
Reg. No.: 39,538

JTE/RJW:mmi/bsh/vd

P.O. Box 747
Falls Church, Virginia 22040-0747
Telephone: (703)205-8000

Attachments: Translations of DE 75 13 261, as discussed above (5 pages)

Design Patent 7513261, Page 3, Paragraphs 1 and 2

Usually, the valve plate 2 is located on a surface 6 of the valve seat 1. The inner surface 5 of the backstop 4 and the surface 6 of the valve seat 1 are tilted towards each other at a pointed angle α of minimal size. The surface 6 of the valve seat 1 is thereby arranged in a vertical direction to an axis 7 of the exhaust valve, and the inner surface 5 of the backstop 4 is tilted towards the axis 7 of the exhaust valve.

As can be seen in Fig. 1, in this embodiment of the backstop 4, the valve spring 3 is more biased on one side (left) than on the other side (right). This gives the valve plate 2 a damper-like movement during its opening and closing strokes, the pivotal point being on the side of the valve spring 3 with the greater bias. The valve plate 2 lifts more on one side (right) than on the other side (left). Beneficially, the point of the valve plate 2 that lifts the least is put at a location 9 where there is no air exhaust flow. In the exhaust valve , this location 9 is located opposite one of the four legs 8 of the backstop 4, which serve as the axial guides of the valve plate 2 (Fig. 2)

Claims of **DE7513261U**

Ansprüche1. Auslassventil eines Kompressors, insbesondere für Druckluft- bremsanlagen von Kraftfahrzeugen,mit einer einen Ventilsitz abdeckenden Ventilplatte, die sich beim Öffnungshub gegen die
Kraft einer an ihr anliegenden Ventilfeder von ihrem Ventil- sitz abhebt, und mit einem Fänger, dessen Fängerinnenfläche als Gegenlager für die Ventilfeder dient, dadurch gekenn- zeichnet, dass die Fängerinnenfläche (5) und die Fläche (6) des Ventilsitzes (1) in einemspitzen Winkel (α) von geringer Grössegegeneinander geneigt sind.

2. Auslassventil nach Anspruch 1, dadurch gekennzeichnet, dass dieFläche (6) des Ventilsitzes(1) zurAchse (7) des Ventils senkrecht angeordnet ist und dass die Innenfläche (5) des
Fängers (4) zur Achse (7) desV. Hls geneigt ist. 3. Auslassventil nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass dieStelle r. Lt dem kleinsten Hub der Ventilplatte (2) an einem Ort (9) liegt, an dem keine Luftabströmung erfolgt 4. Auslassventil nach Anspruch 3, dadurch gekennzeichnet, dass der Ort (9) gegenüber einem Fuss (8) des Fänger (4) liegt.

Description OF DE7513261U < Desc/Clms PAGE NUMBER 1 > exhaust valve of a Kompress@rs the innovation refers to an exhaust valve of one for compressor, in particular for compressed air brakes of motor vehicles, with a valve seat abdeck@nden valve plate, which stands out with the opening stroke against the Keaft more lfeder voii one @@ their lying close valve spring against their Ventilsit @, and with a faenger, whose aengerinnenflaeche serves as Geg@@@ger for the valve spring. < Desc/Clms PAGE NUMBER 2 > EMI2.1 EMI2.2 EMI2.3 EMI2.4 EMI2.5 EMI2.6 EMI2.7 < Desc/Clms PAGE NUMBER 3 > the valve plate 2 lies the momentary is closing force-relatively small. The closing procedure verlaeuft('durch not suddenly but very noiselessly. The inner surface 5 of the faengers bent to the valve seat surface 6 can also by a special wedge piece or an embossment at the catch gutter surface in an educated manner its Claims OF DE7513261U Anspruechel. Exhaust valve of a compressor, in particular for compressed air brake assemblies of motor vehicles, with a valve plate, which stands out with the opening stroke against the strength of one to its lying close valve spring against their valve seat, taking a valve seat off, and with a faenger, whose catch gutter surface serves as back support for the valve spring, thus draws gekenn that the catch gutter surface (5) and the surface (6) of the valve seat (1) are of smaller size against each other bent into one-pointed angle (A). 2. Exhaust valve according to requirement 1, by the fact characterized that those surface (6) of the Ventilsitzes(1) to axle (7) of the valve is perpendicularly arranged and that the inner surface (5) of the faengers (4) to the axle (7) desV. Hls bent is 3. Exhaust valve according to requirement 1 or 2, by it characterized that those-place r. Lt the smallest stroke of the valve plate (2) because of a place (9) is, at that air outflow does not take place 4. Exhaust valve according to requirement 3, by the fact characterized that the place (9) is appropriate opposite a foot (8) faenger of the (4).

Arllage for utility model registration ilic ii7euerii1~;keezj.clll; itself on tIusla.';vcr~til c.ir!c.;; Konprb~ssors, i:lsb<.sotiiitt~~ VO!ifiir D~'~ickl~ft;bl.~~ms~~rl].~i;:*:? Kraftf nhrm:<c!.i&cn, r3.i i; o:i!-.el-eine1.1 Ve~ritilsitz a5dzck: V*:ii ' IL ill att:u, rti? sic:i; beic! 6l'r"nun<;:;ilub gcgsll dj.c Xr3?f t eincr -.: it anlic.~i:!:<lc~~ lfcder;:Ver~t.; veil ihracln vi.1itil~i.c abiicijk, ur?rl;;iii -.. 2:ii+:cinp;i; ~CISSC'II:~!i~r:rir irl~~~fl a12 Ciegc:~.:: i;.;la Fijr uic Vetli, i. li'K~ic,!d uicnli. With such Auslafivcrtilca of't stijr~nd~:Vcnt.il gerausche trcten up. Aufierdem Gffnen it mancomnl nods lccicht enough. The Ncuerung 1iegt aic on gift is ~rbhercZeitspari~ievcrfcilt zugrundo, Vcnti lgcrúrchc to diimpfen, the inden A~fpralçnc:~giedcr Vrntilpla'cte on their Sits on einc. Auhcrdem sol1 the valve also easily Bffr, EN, US EN:~crcits with geringcn Durchflufi:i~cngc~, as sit with riiydriir.(~r Drr~:~::nhl of the Xon:;~resscrsauftreten, trirlrsarn > ~i.:.dc:~ 1::sscn.zu become D;':rch sol1 with low archzahlen you?ijl.uc.r.~r:.~ +r~&c~ tcil;cri;el::. Diesc Aufgabc becomes &cnZ3 >!euc.rur, ~d?durch Gst, da3~cl the Fi;n~c~'ir?rlani'lSchcund the It'l2c:~cdo:; Vcntj lsi:.zr::; in ciilcz1 I.!inkil. of ccl*i: ~~cr ~e&t?nfi llGt~ rC;Y ",r sharpen: ri~ gencigi, sincl. Zin Ausf Ch:u:, galeizpic:l iJcuurung is; j.i~der Zcic!~nu:i~;: dz:r>c, =sti.lltun3 z;q;;~zìgcn: Pig. I r22.s, P:uslaSue~!':L 1 in 5chlic3s tcllunc:.::I cut, Fi;-2 eir!~3raufsicht on the Ausla%vcntil, Urn Fit. 3 DC?: J.;:::la.?Jvc!~iilhalb ge3ffnct and Fig. 4 < - is Al~nl;~:, vonLil fully ~~Sffnet. U2s > - ;IS:~L::~~~rit.I dar~es 1 cinc!s telltcn Kogprcssors 1 does not have eiri.2:: ik:;kllsitz 1, S~erden a Vcncilplatte 2 as Schlir3kBr;~r fL!r the seat arranged is ~ie valve plate 2 unterlicgf the strength of a Vcntilfeder 3, which is anxious, the valve plate 2 DM valve seat 1 and the valve plate 2 uber on ihrcm valve seat 1 to hold lies a Fiinger 4, whose Innenfl 5 as back support fiir the valve spring serves f. The PSnger has four FGBe 8, with which it more gegenliber the valve seat 1 on distance stop and for the AuBenfUhrunz of the valve plate 2 serve itself. -3 The valve plate 2 is appropriate for gew8hnlich on a Fliiche 6 of the Vent.ilsitzes 1. The Innenflxche 5 of the Fiingers 4 and the I Fltiche 6 of the valve seat 1 is against each other bent in a pointed Winkeld, of small GrtXe. The Plgche 6 of the Ventilaitzes 1 is senkrwht arranged to a Achne 7 of the AuslaB venti1.s, and the Innenflzche I; the Fiingcrs 11 is bent to the ~khse7 of the Auslafiventils. Like the Fig. I clakennen 1813t, is vori;d:spannt by this Ausfiihrung of the FGngers 4 the valve spring j on ci uer side (left) more alc; on the other side (right). Dad:lrch becomes the Ventilplntte 2 with their fiffnungs fiffnungs-und Schliefihub a klappcnal t:j.ge Bewe~unl;n:i t fulcrum on the side grGDcrun of the Vo:rspannun.g dcr valve spring 3 gcgeben. The stroke of the Vcntilplatte 2 is on side (right) a gra6er as on the andjoren Seit;e (left). The zweckniiifiigertreise place with;lem klciristen IIub of the valve plate 2 to a place 9 is not ~clegt, at.1 that Luftabstrarnung erfolgl;. This place; g befi!~det;sich with durn fll~slafiventilgegenubcr one of the four FiiBe 8 of the fangers 4, those to * the AzialfiihrDungdcr valve plate 2 dienc:I (Fig. 2). With pressure build-up before the Auslafivcntil the valve plate 2 stands out on the Szite of the smaller Pedervorspannung first against ihrern valve seat I, i.e. the Veritil iiffnet only in a place of the seat extent. The Gffnen ccht lcicht and finds already stalit at nicdrigen numbers of revolutions dcs compressor. Badurch knows the FlSrdermcnge of the compressor with low Drehznhlcn increased werticn (Fig.3). Only with full pressure admission i~irddie valve plate 2 vollstgndig of its seat 1 taken off (Fig. 4). i with the SchlieBen of the AuslaBventils sets scch first the side of the valve plate 2 on the valve seat I, which ausgefiihrt the smaller stroke. Only with progressive pressure drop then also the side with the grÃeren stroke reaches its on situation at the valve seat 1. The acceleration energy of the valve plate 2 uuf a g~60erenZeitraum distributed,so daA -4 the momentary SchlieBkr8fte verhaltnismgîg small are. The SchlieBvorgang verlsuft r32durch not suddenly but very gerauscharm. To the

valve seat-flat 6 bent the interiorflat 5 of the FYngero kn~naucll by besondercs a Kcilsttick or a ei.nen Duckel to the F5ngcrinnenfl{iche ~cbildctsein. I. AuslaBventil of a compressor, inebesondere far compressed air brensanlagen van:Irsftfahrceugen, with ine EN Vent;ilsits a taking off Venlilplatte, which maft itself with the Uffnungshub against one at their lying close valve spring from their valve seat takes off, and with a FEnger, whose Fgngerinnenfl serves as Gegenlâerfiir the Ventilfedcr, thus gelcenn draw, da8 the catch-gutter-flat (5) and the Pl3che (6)des of valve seat (1) in eincrn Winkcl (L)vorl sharpens geringcr burrs gegeneinand~r are bent. II. 2. Auslafivelltil according to requirement I, dadu~~h daf3gekenn::eichnet, > ' laughs (6) of the valve seat (1) to the axle (7j of the Vunti1.s perpendicularly; and daf3 the InnenTlSzhc (5) of the FBngcrs (4) is angeordlict z.lr Acl~se(7) of the VK:itils is genuict. 3. AuslafJventil after Anz, prucil 1 or 2, thus gckennzcichnct, daA the place rnit the kloinsten stroke dcr Vcntj lplattc (2) at a 0r.t; (9) I.iegt, to) no Luf tabst1., 5n1urize~*~'sl.~i, - 4. AuslaBventil after A,!spruch 3, thus gekenrizeichnct, dn8 the place (9) more gegeniiber ei.ne~nFuB (8) I%l more iger,;(4) lie~t

Arllage zur Gebrauchsmusteranmeldung ilic ii7euerii1~;keezj.clll; sich auf ein tIusla.';vcr~til c.ir!c.;; Konprb~ssors,i:lsb<.sotiiitt~~ VO!ifiir D~'~ickl~ft;bl.~~ms~~rl].~i;:*:? Kraftf nhrm:<c!.i&cn,r3.i i; o:i!-.el-eine1.1 Ve~ritilsitz a5dzck: :-d;l:! V*:ii' il ill att:u, rti? sic:i; beic! 6l'r"nun<;:;ilub gcgsll dj.c Xr3?f t eincr -.: ihr anlic.~i:!-:<lc~~ lfcder ;:Ver~t.; veil ihracln vi.1itil~i.c abiicijk ,ur?rl ;;iii -.. 2 :ii+:cinp;i; !*'211gi-:b,~CISSC'II :~!i~r:rir-irl~~~f'l a12 Ciegc:~.::-i;.;la Fijr uic Vetli,i. li'K~ic,!d uicnli . Bei derartigen Auslafivcrtilca trcten of't stijr~nd~:Vcnt.il-gerausche auf. Aufierdem Gffnen sie mancomnl nickt lccicht genug. Der Ncuerung 1iegt aic Auf gabe zugrundo, Vcnti lgcr3urchc zu diimpfen, inden die A~fpral1cnc:~giedcr Vrntilpla'cte auf ihren Sits auf einc ~rbhercZeitspari~ievcrfcilt wird. Auhcrdem soll das Ventil auch leicht Bffr,en, us en :~crcits bei geringcn Durchflufi:i~cngc~- „wie sit bei riiydriir.(~r-Drr~:~::nhl des Xon:;~resscrsauftreten, trirlrsarn >~i.:.dc:~ 1::sscn.zu D;:'-:rch soll bei niedrigen archzahlen dir ?ijl.uc.r.~r:.~~+r~&c~ tcil;cri;el--:: werden. Diesc Aufgabc wird &cnZ3 der >!euc.rur,~d,?durch Gst,da3~cl die Fi;n~c~'ir?rlani'lSchcund die It'l2c:~cdo:; Vcntj lsi:.zr:::; in ciilcz1 spitzen I.!inkil. von ccl*i:-~~cr ~e&t?nfi llGt~-rC;Y" .,r: ri~ gencigi, sincl. Zin Ausf Ch:u:-,galeizpic:l der iJcuurung ist; j.i~der Zcic!~nu:i~;: dz:r>c,=sti.lltun3 z;q;;~z2igcn: Pig. I r22.s ,P:uslaSue~-!':L 1 in 5chlic3s tcllunc :.::I Schnitt, Fi;- 2 eir!~3raufsicht auf das Ausla%vcntil,Urn Fit,. 3 dc?: J.;::-;la.?Jvc!~iilhalb ge3ffnct und Fig. 4 <-is Al~nl;~:,vonLil voll ~~Sffnet. U2s >-;IS:~L::~~~rit.I dar~es 1 cinc!s nicht telltcn Kogprcssors 1 -hat eiri.2:: ik:;kllsitz 1, S~erden eine Vcncilplatte 2 als Schlir3kBr;~r fL!r den Sitz angeordnet ist. ~ie-ventilplatte 2 unterlicgf der Kraft einer Vcntilfeder 3, die bestrebt ist, die Ventilplatte 2 auf ihrcm Ventilsitz 1 zu halten. uber dm Ventilsitz 1 und der Ventilplatte 2 liegt ein Fiinger 4, dessen Innenflsche 5 als Gegenlager fiir die Ventilfeder f dient . Der PSnger hat vier FGBe 8, mit denen er sich gegenliber dem Ventilsitz 1 auf Abstand halt und die zur AuBenfUhrunz der Ventilplatte 2 dienen. -3- Die Ventilplatte 2 liegt gew8hnlich auf einer Fliiche 6 des Vent.ilsitzes 1. Die Innenflxche 5 des Fiingers 4 und die .I Fltiche 6 des Ventilsitzes 1 sind in einem spitzen Winkeld, von geringer GrtXe gegeneinander geneigt. Dabei ist die Plgche 6 des Ventilaitzes 1 zu einer Achne 7 des AuslaB- venti1.s senkrwht angeordnet, und die Innenflzche I; des Fiingcrs 11 ist zur ~khse7 des Auslafiventils geneigt. Wie die Fig. I clakenncn 1813t, ist durch diese Ausfiihrung des FGngers 4 die Ventilfeder j auf ci uer Seite (links) mehr vori;d:spannt alc; auf der anderen Seite (rechts). Dad:lrch wird der

Ventilplntte 2 bei ihrem fiffnungs-und Schliefihub eine klappcnal-t:j.ge Bewe~unl;n:i t Drehpunkt auf der Seite der grGDcrun Vo:rspannun.g dcr Ventilfeder 3 gcgeben. Der Hub der Vcntilplatte 2 ist auf der einen Seite (rechts) gra6er als auf der andjoren Seit;e (links) . Dabei wird zweckniiifiigertreise die Stelle mit ;lem klciristen IIub der Ventilplatte 2 an einen Ort 9 ~clegt,at.1 dem keine Luftabstrarnung erfolgl;. Dieser Ort; g befi!~det;sich bei durn fll~slafiventilgegenubcr einem der vier FiiBe 8 des Fangers 4, die zur* AzialfiihrDungdcr Ventil- platte 2 dienc-:I (Fig. 2). Bei Druckaufbau vor dem Auslafivcntil hebt sich die Ventil-platte 2 auf der Szite der kleineren Pedervorspannung zuerst von ihrern Ventilsitz I ab, d.h. das Veritil iiffnet nur an einer Stelle des Sitzumfangs. Das Gffnen ccht lcicht und findet bereits bei nicdrigen Drehzahlen dcs Kompressors stalit. Badurch kann bei niedrigen Drehznhlcn die FlSrdermcnge des Kompressors gesteigert werticn (Fig.3). Erst bei voller Druck-beaufschlagung i~irddie Ventilplatte 2 vollstgndig von ihrem Sitz 1 abgehoben (Fig. 4). i Beim SchlieBen des AuslaBventils legt scch zuerst die Seite der Ventilplatte 2 am Ventilsitz I an, die den kleineren Hub ausgefiihrt hat. Erst bei fortschreitenden Druckabbau erreicht dann auch die Seite mit dem gr6Aeren Hub ihre An- lage am Ventilsitz 1. Die Beschleunigungsenergie der Ventil- platte 2 wird uuf einen g~60erenZeitraum verteilt ,so daA -4- die momentanen SchlieBkr8fte verhaltnismg4ig klein sind. Der SchlieBvorgang verlsuft r32durch nicht schlagartig sondern sehr gerauscharm. Die zur Ventilsitzflache 6 geneigte Innenflache 5 des FYngero kn~naucll durch ein besondercs Kcilsttick oder ei.nen Duckel an der F5ngcrinnenfl{iche ~cbildctsein. I. AuslaBventil eines Kompressors, inebesondere far Druckluft-brensanlagen van :Irsftfahrceugen,mit einer ine en Vent;ilsits abdeckenden Venlilplatte, die sich beim Uffnungshub gegen die maft einer an ihr anliegenden Ventilfeder von ihrem Ventil-sitz abhebt, und mit einem FEnger, dessen Fgngerinnenflsche als Gegenla~erfiIr die Ventilfedcr dient, dadurch gelcenn-zeichnet, da8 die Fangerinnenflache (5) und die Pl3che (6)des Ventilsitzes (1) in eincrn spitzen Winkcl (L)vorl geringcr Grate gegeneinand~r geneigt sind. II. 2. Auslafivelltil nach Anspruch I, dadu~~h daf3gekenn::eichnet, die >'lache (6) des Ventilsitzes (1) zur Achse (7j des Vunti1.s senkrecht; angeordlict ist und daf3 die InnenTlSzhc (5) des FBngcrs (4) z.lr Acl~se(7) des VK:itils genuict ist . 3. AuslafJventil nach Anz,prucil 1 oder 2, dadurch gckennzcichnct, daA die Stelle rnit dem kloinsten Hub dcr Vcntj-lplattc (2) an einem 0r.t; (9) I.iegt, an den) keine Luf tabst1.,5n1urize~*~'sl.~i, - 4. AuslaBventil nach A,!spruch 3, dadurch gekenrizeichnct, dn8 der Ort (9) gegeniiber ei.ne~nFuB (8) des I%l-iger,-;(4) lie~t.